

REMARKS

An appeal was filed from the final rejection of the above claims and Applicants filed an appeal brief with the Board of Patent Appeals and Interferences. In response, the Examiner has reopened prosecution for the purpose of supplementing the previous rejections with US Pat. 4,007,735 (Magnusson). The previously cited Larson et al. and Fukumoto et al. references have been dropped.

The Magnusson patent describes a pneumatic cervical vibrator. The patent was cited because it states that the center of gravity of the vibrator is relatively close to the end of the holder where the pneumatic motor is placed. This patent has nothing to do with ultrasound and is of a non-analogous art. Enclosed is a declaration from Dr. John Fraser, who has designed and developed ultrasound probes and transducers for over 38 years. Dr. Fraser makes plain the fact that no one skilled in the art of ultrasound probes and transducers, the subject of the present application, would consider the Magnusson patent and cervical vibrator to be relevant to ultrasound. In the present invention the inventors faced the challenge of reducing the capacity of the rigidly dimensioned fluid compartment at the tip of the probe shaft to as great a degree as practical so as to make the probe more maneuverable and controllable by the sonographer. Magnusson is trying to vibrate the tip of his instrument while reducing the vibrations felt by the operator's hand. The two are entirely different. The Magnusson vibrator has no transducer, no rigidly dimensioned fluid compartment, no liquid bath to couple ultrasound from a transducer to a patient. As the Fraser declaration makes clear, the non-analogous Magnusson patent is irrelevant to an ultrasound probe designer and thus cannot be combined with the Silverstein et al. patent to render the claimed invention unpatentable.

Even if the Magnusson patent were properly combinable with the other cited references, numerous differences remain between the claimed invention and the cited references. For one, Claim 1 calls for a rigidly dimensioned fluid compartment at the distal end of the ultrasonic probe. The Examiner tries to make the flexible bag 62 at the end of the Silverstein et al. probe a rigidly dimensioned compartment because a solid transducer body 50 is located inside the flexible bag. The fact that these two items do not create a rigidly dimensioned compartment is seen at a glance from Figs. 3A and 3B of Silverstein et al. where the flexible bag is changed from short and loosely fitting to elongated and tightly fitting. The change in the claim term by the Examiner from "rigidly dimensioned"

compartment" to "rigidly dimensioned component" also does not support the contended rejection.

The other piece of art cited against the instant claims is the Bushek et al. patent, also from non-analogous art, in this case, a hearing implant. The Bushek et al. hearing implant uses a stationary transducer mounted in an adjustable assembly made of materials other than stainless steel. But this assembly does not have to oscillate at the rates necessary for live ultrasound imaging as does the array transducer in an embodiment of the present invention. The forces, friction and wear of an oscillatory ultrasound probe mount pose entirely different problems from those faced by Bushek et al., who only have to perform fine adjustments of their otherwise stationary assembly, which is then locked with a set screw. The Bushek et al. patent, like the Magnusson patent, is equally inapplicable to ultrasound probes of the present claimed invention.

In view of the foregoing, it is respectfully submitted that Claims 1, 2, and 4-20 are patentable over any combination of Silverstein et al., Magnusson, and Bushek et al. It is further respectfully submitted that Magnusson and Bushek et al. should not even be properly applied references in this application as they are from completely non-analogous arts. Accordingly it is respectfully requested that the rejection of Claims 1, 2, and 4-20 under 35 U.S.C. §103(a) be withdrawn.

In light of the foregoing amendment and remarks, it is respectfully submitted that this application is now in condition for allowance. Favorable reconsideration is respectfully requested.

Respectfully submitted,

DAVID BECKER ET AL.

By: /W. Brinton Yorks, Jr./

W. Brinton Yorks, Jr.  
Reg. No. 28,923

Philips Electronics  
22100 Bothell Everett Highway  
P.O. Box 3003  
Bothell, WA 98041-3003  
(425) 487-7152  
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